Report of a Training Workshop on

"Collection, Processing and Analysis of Data relating to operational aspects of filariasis control with special reference to *Mass Drug Delivery*"

20 th to 24 th April, 1998

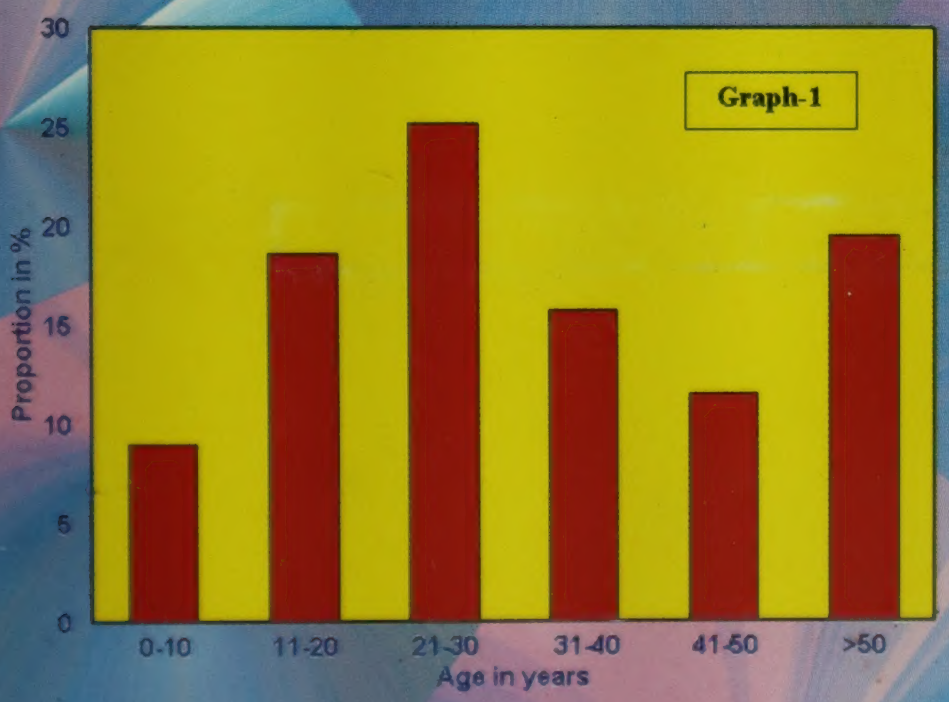
Jointly organized

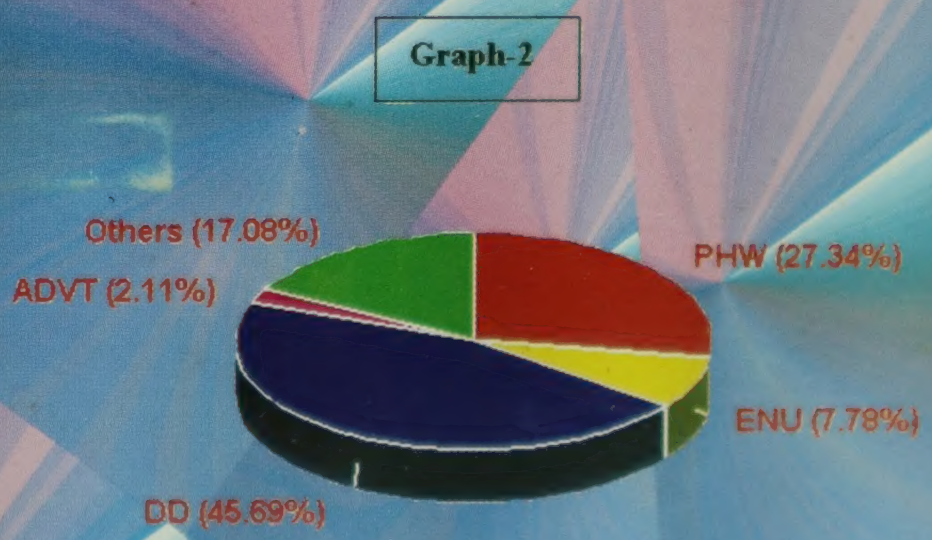
by

VECTOR CONTROL RESERCH CENTRE
(INDIAN COUNCIL OF MEDICAL RESEARCH)

&

NATIONAL FILARIASIS CONTROL PROGRAMME
(NATIONAL MALARIA ERADICATION PROGRAMME)





Held at

VECTOR CONTROL RESERCH CENTRE
(INDIAN COUNCIL OF MEDICAL RESEARCH)
INDIRA NAGAR, PONDICHERRY
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06127

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FRONT COVER:

Graph 1: Age distribution of those who did not consume DEC in Cuddalore district. Tamil Nadu in 1996

Graph 2: Community awareness about the programme by different IEC methods in Cuddalore district, Tamil Nadu in 1996

PHW – PHC Health Worker
ENU – During enumeration
DD – During distribution
ADVT – Through advertisement

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CONTENTS

1. Introduction

1.1. Overview of the workshop 1
1.2. Genesis 1
1.3. Objectives 2
1.4. Expected outcome 2
1.5. Perceptions of the participants 3

2. Filariasis problem and its control in India

2.1. Filariasis problem in India 3
2.2. National Filariasis control programme 3
2.3. Mass annual single dose DEC delivery (MDD) programme ... 4

3. Review of the on-going MDD programme 5

3.1. Presentation of district reports 5
3.2. Inferences drawn 6

4. Basic concepts 6

4.1. Need for data collection 7
4.2. Epidemiological terminologies and indices 7

5. Data requirements with respect to phases of MDD... ... 7

6. Methods of data collection 8

7. Sampling design 8

7.1. Basic concepts and terminology 8
7.2. Methods of sample selection 10
7.3. Suggestions for MDD programme 11

8. Formats for data collection 12

9. Data analysis 13

9.1. Indices for operational evaluation 13
9.2. Indices for impact evaluation 15
9.3. Cost analysis 16
9.4. Simple statistical analysis 16

10. Workshop review 17

11. Recommendations 17

Report prepared by Dr.P.K. Das, Dr.S.P.Pani, Dr.K.Krishnamoorthy and Ms.A.Srividya, Vector Control Research Centre, Pondicherry

CONTENTS

1. INTRODUCTION:

1.1. OVERVIEW OF THE WORKSHOP:

This is the report of a training workshop on the **"Collection, Processing and Analysis of data relating to operational aspects of filariasis control with special reference to Mass Drug Delivery (MDD)"**, jointly organized by the Vector Control Research Centre (VCRC) and the National Filariasis Control Programme (NFCP) and held at the VCRC between 20th and 24th April, 1998. The report is expected to serve as a future reference material for the district and the state level implementers as well as evaluating organizations. Both the components viz., the process and impact evaluation of the MDD (annual single dose DEC) programme were covered in this training workshop. The list of participants, observers and faculty is given in Annexure I. Details of the day to day programme are given in Annexure II.

1.2 GENESIS:

Lymphatic filariasis has been identified as one of the potentially eradicable disease and the 50th World Health Assembly, 1997 has passed a resolution that "elimination of filariasis as a public health problem" should be considered a priority by member states. Since India alone contributes to about 40% of global burden of lymphatic filariasis, steps must be initiated in highly endemic areas to make best use of available knowledge on filariasis control. About 428 million people are estimated to be at the risk of filarial infection of whom 113 live in urban areas and 315 in rural areas. Current control strategy of selective chemotherapy and larval control under the National Filariasis Control Programme (NFCP) is limited only to urban areas, catering to about 11% of population exposed to risk of infection. A majority of the people at the risk of filarial infection lives in rural areas (74%) where control programmes need to be developed and implemented. In view of this, the NFCP has recommended MDD in 13 endemic districts in seven states of India (Table 1) on a pilot scale in 1996.

The public health departments of the concerning states are implementing the programme in collaboration with NFCP. Vector Control Research Center (VCRC) and the National Institute for Communicable Diseases (NICD) are involved as nodal research organizations for the development, monitoring and evaluation of the programme. The need for conducting this workshop arose from the following observations made during the first two years of activities in Tamil Nadu and one year of activity in Kerala and Orissa.

a. Providers of this programme at different levels of implementation (state health personnel) did not have a clear perception on the genesis, objectives and the modalities of operation and evaluation of the MDD.

b. As a result of the above, the data gathered and the formats of the data capture in different districts were different and hence the results were not comparable.

c. Prevalence of infection and disease being low in some districts, it is difficult to

Table 1: Details of the districts identified for implementation of revised strategies

Sl. No	States	Districts	Population (in millions)	Year of survey	microfilari rate (%)	Disease rate (%)	Endemicity rate (%)
1	Andhra Pradesh	1. East Godavari	4.91	1983	16.70	8.90	25.60
		2. Srikakulam	2.49	1956	13.90	4.10	18.00
2	Bihar	3. Darbhanga	2.51	1958	14.50	16.30	30.80
		4. Siwan	2.17	1958	2.89	4.87	7.76
3.	Kerala	5. Alappuzha	2.11	1953	17.30	36.30	53.60
		6. Kozhikode	2.76	1959	9.00	22.80	31.80
4.	Orissa	7. Khurda	1.63	1958	4.51	5.00	9.51
		8. Puri	1.41	1957	13.00	15.00	28.00
5.	Tamil Nadu	9. North Arcot	5.23	1996	0.33	NA	0.33
		10. South Arcot	4.87	1996	1.36	NA	1.36
6.	Uttar Pradesh	11. Gorakhpur	3.30	1962	6.65	11.84	18.49
		12. Varanasi	5.30	1958	10.80	10.10	20.90
7.	West Bengal	13. Purulia	2.22	1988	1.27	11.72	12.99
		Total	40.91				

Source: NICD/NMEP (1996). Revised strategy for the control of lymphatic filariasis in India. pp:1-45

ascertain the success or failure of this programme and the factors.

Evaluation of the usefulness of mass drug delivery programme will influence the decision regarding its extension to other areas. Since the outcome of these studies facilitate optimization of the programme and possible extension to other areas, proper evaluation of pilot programme with common protocol and output variables are absolutely essential.

Therefore, it was felt essential that uniform methods are developed and standardized for data collection and analysis, both for the process monitoring and for outcome (impact) assessment.

1.3 OBJECTIVES:

The objectives of the workshop were:

a) To orient the district level implementers on the conceptual framework of the programme.
b) To familiarize with the different terminology and indices related to programme evaluation
c) To train on the basic concepts of choice of methods of data collection, data formats, sampling design and analyses.
d) To design the primary data capture formats and summary tables for data transmission at district level for process and impact.
e) To offer practical exposure on the basic minimum types of analysis to be carried out for comparison of the process and the impact of MDD between districts.

1.4 EXPECTED OUTCOME:

a) It was expected that the district officials would benefit in having a better understanding of the following,

   (i) the conceptual frame work of mass drug delivery programme.
   (ii) the principles applied for the programme planning, implementation, monitoring and evaluation.
   (iii) responsibility of Programme Officers and district Officers in process monitoring.
   (iv) the principles of programme design for monitoring and evaluation, development of instruments necessary for collecting appropriate and accurate data (data quality and adequacy).
   (v) methods of data collection, principles of sampling, preparation of summary tables, preliminary analysis and reporting.

b) To develop uniform data capture formats, summary tables/ preliminary summary analyses tables which should be used in all the 13 districts where this programme has been initiated.

1.5 PERCEPTIONS OF THE PARTICIPANTS

It is essential for any training programme to assess whether the objectives are achieved. Motivation of the trainees is equally important for the success of the workshop. In this context, the perception of the participants was assessed on filariasis, extent of the problem, its distribution, methods of control, monitoring and evaluation etc., based on which the training was made dynamic to suit to the actual needs and the level of understanding. This was carried out using an objective type questionnaire (Annexure III).

2. FILARIASIS PROBLEM AND ITS CONTROL IN INDIA

2.1. FILRIASIS PROBLEM IN INDIA:

Currently it has been estimated that a population of 428 million in India is exposed to the risk of filarial infection. There are 21 million individuals with chronic disease and 28 million individuals are infected (microfilaraemic). It has been estimated that India alone contributes to about 40 % of the global burden of lymphatic filariasis. A recent estimate has shown that this disease alone results in an annual loss of 1.5 billion dollars (WHO, 1997). In India, 7 states (Andhra Pradesh, Bihar, Kerala, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal) contribute to over 95% of the total burden (Table 2).

Primarily the National Filaria Control Programme (NFCP) for the purpose of delimitation has estimated the burden of filariasis in terms of infection and disease prevalence at different points of time. Delimitation surveys, carried out until 1995 showed that there has been increasing trend in these estimates which is primarily due to the increasing size of the population. Apart from this, the changes in land use patterns, the newer water resources development projects, deforestation, rapid urbanization and industrialization and above all the population movement at higher rate could have resulted in the introduction of infection to the newer (non-endemic) areas.

2.2. NATIONAL FILARIASIS CONTROL PROGRAMME (NFCP):

Based on a pilot scale programme for the control of Filariasis in India, launched in 1949 in the State of Orissa, a country-wide program named as National Filariasis Control Programme (NFCP) was initiated with the co-operation of United States Technical Co-operation Mission (now USAID) during 1955-56.

Mass DEC distribution with daily doses of 4 mg per kg of body weight was carried out for 5 successive days. The mosquito control operations consisted of both anti-adult (indoor residual spray of dieldrin 50 mg per square foot) and anti-larval measures (water soluble BHC powder, 6.5% gamma). This programme was continued for 5 years and 5.62 million persons out of 14.1 million (total population where the programme was implemented) in 47 control units were covered under the mass chemotherapy programme in different areas in India. The coverage of full five-day course ranged between 38.3% and 97.6% in different units. On an average, 16.5% of the population complained of adverse reactions. The reduction in microfilaria density

Table: 2. Statewise estimated population at risk of filariasis, mf carriers and disease cases in 1995 (in millions).

Sl. No.	States/U.Ts	Population at risk	Microfilaria carriers	Persons with disease
1	Uttar Pradesh*	99.72	7.02	7.52
2	Bihar*	63.95	4.34	5.95
3	Andhra Pradesh *	53.47	3.97	1.48
4	Kerala*	31.38	2.49	2.45
5	Tamil Nadu*	38.89	2.45	1.30
6	Orissa*	27.05	2.39	1.51
7	Gujarat	18.25	1.10	0.14
8	West Bengal*	20.09	0.98	0.03
9	Maharastra	18.55	0.95	0.17
10	Karanataka	11.75	0.75	0.08
11	Madhya Pradesh	23.86	0.56	0.08
12	Assam	10.38	0.39	0.09
13	Pondicherry	0.76	0.03	0.01
14	Goa	1.28	0.01	-
15	Andaman & N isles	0.22	0.01	-
16	Dadra & N.H.	0.13	0.01	-
17	Lakshadweep	0.05	0.01	-
18	Daman & Diu	0.07	-	-
Grand Total		419.85	27.46	20.81
* Total of 7 districts		334.55	23.64	20.24
7 Districts as % of grand tot		79.68	86.09	97.26

Source: NICD/NMEP (1996). Revised strategy for the control of lymphatic filariasis in India. pp:1-45

ranged between 10.9% to 84.6% in one year. Five years activity of the NFCP was reviewed by ICMR assessment committee and it recommended that the programme be modified and that control be based solely on measures against larvae of vector, *Culex fatigans* (now *quinqufasciatus*), directed to urban endemic areas. Mass administration of DEC was abandoned due to the following reasons: (a) there was poor coverage in most of the areas and unpleasant reactions following administration, (b) administration of drug failed to clear the microfilariae in some individuals, in some areas, the reduction in microfilaraemia did not persist, and (c) decline in infectivity rate of mosquitoes was not appreciable in most areas (NFCP, 1984; NFCP, 1995; Sasa, 1976). One has to also understand that the drug was being given by a mass chemotherapy programme, targeting the entire community for the first time and the programme implementing authorities did not have a proper understanding of the adverse reactions, its causes and management. Community preparation was also inadequate.

The activities of the NFCP was subsequently reviewed by the second assessment committee in 1970 and it was recommended to carry out selective chemotherapy by detection of parasite carriers (by night blood surveys) and treatment (6mg / kg /day / 12 days). These recommendations have been implemented in urban areas since 1971. The fourth committee has suggested the introduction of medicated salt in a phased manner, but this has not been undertaken (except in one district in Tamil Nadu). Currently, a total population of 40 million (37% of the urban population at risk) is covered under the programme (NFCP, 1995). In other words, only 11% of the total population at risk are being covered. There is no programme to control filariasis in rural areas.

2.3. MASS ANNUAL SINGLE DOSE DEC DELIVERY (MDD) PROGRAMME:

For decades, the programme has been facing the present challenge to develop appropriate strategy for control of filariasis in rural areas and the concept of MDD, although not new with single annual dose DEC is therefore worth attempting. This initial programme is intended to test hypothesis that "If majority of people in a community consume single dose of DEC annually once, it will reduce the parasite load and if continued for sufficiently long, may eliminate filariasis". Indeed, if successful, this is likely to pave a way for designing the elimination strategy. This is the long-term goal, which depends on the results of this initial programme. Since, it is proposed that this programme is going to form the basis for future action, it is very important that the recording of the process, monitoring and evaluation should be proper. Sound decisions can only be taken based on information generated from quality data. Although the original programme goes in the name of "National Filariasis Day", in practice the distribution continues for a period of 1-2 weeks. In the national context, the programme is best described as "Mass annual drug delivery" programme.

In 1996, the programme was implemented for the first time in Cuddulore district (part of erstwhile South Arcot), Tamil Nadu. In 1997, it was implemented in 4 more districts in Tamil Nadu (Thiruvanamalai), Kerala (Allapuzha and Kollikode) and Orissa (Khurda) in 1998. Independently, the Government of Tamil Nadu extended this

programme in 10 other districts in the state. Apart from this, a programme of mass drug delivery through voluntary organizations has also been launched in Pondicherry from 1997 with the technical guidance of VCRC and drugs provided by Anganwadi workers of Social Welfare Department.

The programme is planned for a period of 5 years since the fecundic life span of the parasite is about 5 years. This exploratory programme is expected to undergo dynamic changes in its approach and its implementation. Sufficient freedom is being given to design the process of implementation, depending on the local situation, logistics, resources etc. The flexibility of approach can be noted from the fact that while in some districts the programme is implemented through intensive active door to door approach, in others it is through passive depot systems. In fact, the current programmes are based on "resource based planning". Since it is not clear as to what level of operational success and long term effects in terms of reducing the parasite burden, the programme remains open ended.

MDD is primarily for rural areas, but in the districts where it is implemented, the urban areas will also be covered. In addition, the NFCP strategy already being implemented will be continued routinely.

Since MDD is undertaken as an exploratory pilot study in many districts, it is essential to develop common protocol for monitoring and evaluation. The programme implementers tend to give importance to the operational aspects, overlooking the components regarding monitoring and evaluation. Most of the time programmes are implemented with out proper recording of the process and rigorous evaluation of the programme. Therefore it is not possible to determine the level of success and key factors which influence the outcome. Due emphasis on this aspect was given in this workshop so as to make the programme implementers realize the importance of proper data collection, analysis and interpretation.

3. REVIEW OF THE ON-GOING MDD PROGRAMME:

Review of the ongoing programme was necessary to understand the context in which it was carried out in different districts, the methods employed in data collection, preparation of summary tables, analysis of data, presentation of results and preparation of reports. This formed the basis on which the entire workshop exercises were planned.

3.1. PRESENTATION OF DISTRICT REPORTS:

MDD programme was implemented for the first time in Cuddalore district in Tamil Nadu in 1996. During 1997, four other districts (Thiruvanamalai in Tamil Nadu, Allapuzha and Kolikhode in Kerala, Khurda in Orissa) were also included. Dr.Meera and Dr.Rajagoplan presented detailed reports for Cuddalore and Thiruvanamalai districts respectively. NFCP, VCRC and NICD reviewed implementation of MDD in the other three districts during early 1998 and the results were discussed.

3.2. INFERENCES DRAWN:

The following important points generated:

a) Records of distribution / supervised consumption are not maintained separately, which will have critical bearing on efficacy.
b) Impact assessment in low endemic areas is difficult.
c) Simple random selection of villages for impact assessment was found to be inappropriate due to spatial variation in the distribution of filariasis within an endemic district. Therefore it is necessary that the sampling design for village selection should consider different endemic strata which can be determined by initial Rapid Assessment Procedure (direct key informant interview).
d) The night blood survey for impact assessment had inadequate coverage and the quality of blood sampling and processing was not satisfactory. The coverage of the target population should be adequate to represent the population using appropriate sampling frame. Adequate blood sample should be properly collected, fixed and stained.
e) Records on microfilaria count (density) for each positive individual were not available. Since the mean microfilaria count is identified as the most sensitive epidemiological parameter to be influenced by the MDD, it is crucial for impact assessment and therefore this data should be recorded properly.
f) The age and gender details of population covered under MDD and in the epidemiological survey were not available. These data are essential for age and gender specific coverage, changes in microfilaria prevalence and intensity, and incidence of disease. Therefore this information should be collected using appropriate formats.
g) Verification of records and cross checking of data was not done properly. For this, it is a necessity to develop uniform mechanisms of data verification and cross-checking at different levels to ensure data quality.
h) There was no uniformity in the preparation of summary tables and reports which makes the comparison of results difficult. Therefore, it is also essential to train the participants on these aspects including the necessity of collecting accurate data on denominators for several parameters.

4. BASIC CONCEPTS:

Any programme is run in a clear **context**, there are several inputs, there are **processes**, there are some **constraints**, there are some **outputs** and it moves towards an ultimate goal. Several activities are involved in the process of implementation. For better implementation, for monitoring, process evaluation and for impact assessment, it is essential to list all the activities in a logical sequence, outline the objectives of each of the activities listed, the methods to be used, the level at which the activity is executed, the expected outputs, a time frame of the activities and expected constraints, if any.

It is essential to orient the participants on the above aspects and the basic

concepts of data collection and the process by which the data is converted to meaningful information by proper recording and analysis. This is particularly important for the district level officials since the MDD for the control of filariasis is a new programme and they had no exposure to the epidemiological terminologies related to filariasis and its control and, the key indices and the data required for their determination.

4.1. NEED FOR DATA COLLECTION:

Any intervention programme which is to be developed particularly for application covering larger areas on long-term basis, it becomes essential to optimize the inputs and outputs in terms of cost effectiveness and cost benefit in the context in which the programme has been designed. This information is critical and therefore appropriate data has to be collected which will form the basis for taking sound decisions. Clear understanding of the questions that need answers during different phases of activities of the programme justifies the need for collection of particular data. Examples of such questions in the context of the different phases of MDD are given in Annexure IV .

4.2. EPIDEMIOLOGICAL TERMINOLOGIES AND INDICES

An understanding of different epidemiological terminologies and indices in the context of monitoring and evaluation of the process and the impact of MDD in filariasis control is necessary. This will enable the participants to comprehend the real need of the types of data to be collected, the methods to be employed, the sampling design to be followed, use of appropriate formats of recording and subsequent analysis of data. Annexure V summarises the definition of relevant terminologies and indices, discussed in the workshop.

5. DATA REQUIREMENTS WITH RESPECT TO PHASES OF MDD:

As the goal of the pilot scale trial of MDD is to evolve the process and evaluate the impact of the intervention, it is essential to generate comprehensive data for each activity during different phases of the programme. It was emphasized that this would enable carrying out both formative as well as summative evaluation. The participants were given considerable exposure on formulating the basic structure of phases of programme, the activities in these phases, the objective of each activity and the expected outcome along with time frame of action. It was aimed to involve the participants in conceptualizing the entire process and therefore the need for data collection for each of the above activity was emphasized.

An exercise was done to conceptualize a uniform thinking in the anticipated activities for the MDD at district level. For this the group was divided into two after the group exercise, they prepared and presented the activity chart pertaining to (a) planning of MDD programme and (b) implementation / monitoring and evaluation. The charts prepared are shown in Annexure VI. These charts were the outputs of the exercise carried out during the workshop and these can be appropriately modified

based on the local programme design.

6. METHODS OF DATA COLLECTION:

Depending upon the objective, type of and quality of information required and the resources available, one can select the method of data collection. There are several methods, both quantitative (such as blood survey, structured questionnaires etc.) and qualitative (interview texts). These were outlined and the possible use of these for the MDD programme was discussed. (Annexure VII)

7. SAMPLING DESIGN:

In science and human affairs, due to lack of resources it is possible to study only a part of a phenomenon. The purpose of sampling is to understand/know characteristic of the population without studying the entire population. That is, instead of the entire population (say 'N') a small number of units (say 'n') from the population are selected and the information of interest is obtained from them. All the inferences derived based on this smaller number of units is assumed to be true for the entire population. **Sampling** has following advantages:

a) Reduction in Cost (in collection of data/transportation)
b) Reduction in time (since it contains lesser units to cover)
c) Increased accuracy (errors in data collection will be minimal when the number is less and trained data collectors are used)
d) Increased scope (Detailed information could be obtained with lesser individuals than a larger number)

Therefore **a sampling design** is put forth to optimize on cost and time; increase the accuracy on the information. A sampling design will depend upon

1. Objectives of the study
2. Population characteristics (Age, sex distribution etc.,)
3. Degree of precision desired (d) (how closely the estimate should be to the actual value of the characteristic under study).
4. Amount of sampling error to be allowed. Sampling error is the small risk (α) which one is willing to incur that the actual error in the estimate is larger than the precision "d".

7.1. BASIC CONCEPTS AND TERMINOLOGY:

a) **Sampling unit** is the one from which the data on the characteristic under study is collected.

b) **Sample size** (n) is the minimum number of individuals to be included in the sample.

c) **Sampling Frame** is a guide to approach the population to be sampled depending upon the sampling unit (with maps, list of towns/villages, list of wards/streets, list of households, list of individuals).

The above points with respect to MDD may be listed as follows:

- *Objectives of the study – Reduction in the level of on-going transmission by lowering the mF prevalence/density in the population.*

- *Data to be collected – Infection status (such as mF prevalence & intensity) in human population,*

- *Definition of the population – Individuals living in rural and urban areas form the study population, number of males, females etc.,.*

- *Level of sampling error and the desired precision for the estimate*

  - The amount of error one would allow in the estimate due to sampling (usually a small as possible, say 5%).

  - The desired precision decides on how close the estimate will be to the actual population value. This is 5-20% of the prior estimate value (if available)

- *Sampling unit in this excercise is a household, in which all the individuals within the selected household will be examined for infection status, disease status.*

If already a prior estimate of the characteristic under study is available for the population, the sample size can be estimated based on this value and the information (3) and (4) given above.

In context to MDD, the sample size for a night blood mF survey will depend on the prior estimate of mf prevalence (if available), degree of precision desired and the tolerable amount of error allowed. The following formula may be used:

$n= (4 * p* q)/d^2$, where

where p = estimate of the proportion
q= 1-p
d= desired precision (usually (5-20%) of the proportion p)

If no prior estimates of mF prevalence is available, then a 10% of the population may be covered in an area. For an urban area, 5% would suffice.

Sampling Frame In the case of MDD, it will be the list of PHCs, Villages, Town

Panchayats, Municipalities, streets / wards in these areas, list of households (which are the sampling units).

7.2. METHODS OF SAMPLE SELECTION

Once the sample size has been estimated the next step is to draw the samples from the population. There are several sample selection methods. The choice of the technique depends upon the objective, logistics etc. The sampling methods that are commonly used in epidemiological surveys are given below:

1. **Random Sampling**: This sampling method is adopted when a sampling frame is well defined in respect to the characteristic of the population under study. It is assumed that the characteristic under study is homogeneous in the population.

   Method: Here the sampling units are numbered. Once the sample size has been decided upon, random number tables are used to draw the samples.

   Limitations: It requires a sampling frame. If the selected samples lie scattered in a geographical area, this method will be more time consuming and costly.

2. **Systematic Sampling**: In the absence of sampling frame for the population under study and also for large sample size, this method may be used.

   Method: Calculate the sampling fraction k=N/n. Then randomly select a number between 1 and k, say "a". Start with "a" and thereafter every "k" th unit in the population is sampled till the required sample size is obtained.

   Limitations: If the sampling interval is related to periodic features, bias may be introduced. The errors increase if there is a stratification effect in samples.

3. **Cluster Sampling**: This is used when the sampling unit consists of group of cluster on smaller units. Eg: Blocks of flats with affluent people. Study population is spread to a larger area and there are logistics constraints (in cost of travelling, time etc.,).

   Method: Here the population is divided into groups (clusters) based on geographical or administrative aspects and these are the sampling units here. From these, "n" such groups are randomly selected and all the units in those groups are included in the sample.
   Limitations: Errors are likely to be larger in this method than any other method. In case the clusters are homogeneous within themselves, the estimate might be biased. Also, variance will be high when compared to Random sampling.

4. **Stratified Sampling**: Used where the characteristic under study is not homogeneous in the population. This method is usually followed by any of the above mentioned sampling methods.

Method: The study population is divided into different strata, which are homogeneous within themselves. Samples are then selected from each of these strata either using random sampling / systematic sampling / cluster sampling.

Limitations: Knowledge about the proportion of population in different strata should be known to reduce the error due to sampling. The strata should be well defined such that the homogeneity within the strata is maintained.

The method of sample selection is done using any of these methods or in combination of all these methods. The ultimate aim is to get the sample adhering to points a-d and be representative of the population under study.

- In regard to MDD, for night blood mF survey in an urban area (with no prior estimates of mf prevalence), 5% of the population has to be covered. Due to logistics, the sampling unit will be a household and all individuals in the selected households will be included in the survey (assume on an average there will be 4 individuals per household). With these,

- In a Municipality, the wards may be considered as different strata.

- In each of this ward, cover 5% of the population. For this the number of households in each ward and streets in those wards should be available.

- Use random sampling or systematic sampling to select the number of households (assuming an average family size of 5) within each ward such that the 5% is reached.

- Include all individuals in the selected households and that will result in 5% coverage in that ward.

7.3. SUGGESTIONS FOR MDD PROGRAMME

Evaluation of MDD programme covers: (i) process evaluation and (ii) efficacy evaluation.

Process evaluation: Process evaluation has several components and depending upon the aspects to be covered and after deciding the method of data collection, appropriate sampling design has to be formulated. Following issues are discussed briefly.

Coverage: Issue of coverage of distribution and consumption should ideally be recorded as primary data at the time of drug distribution, in which case, sampling design is not required. If it is not possible to record the consumption as primary data, a sample survey has to be carried out subsequently. These surveys should also include components relating to compliance (adverse reaction) and efficacy of IEC tools employed. Questionnaire survey should be carried out within a limited period of time

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(one month) from the date of distribution considering the memory of individuals respondents, which will influence the quality of data. The sampling units should be individuals who are interviewed from selected households in selected villages and PHCs in rural areas and similar households from selected wards in all town panchayats and municipal areas. The method of selection of study area/household/individual should be similar to that for efficacy evaluation as described below.

Efficacy evaluation: Efficacy evaluation is based on the parasitological surveys in human population before and after the intervention covering certain proportion of population in selected villages/wards. Distribution of filariasis known to be clustered and therefore selection of villages for impact assessment should cover representative samples from different clusters (such as low, medium and high) with in a given district (Annexure VIII). The steps involved are given below:

a) Estimate the disease burden in the communities using a Key Informant method (RAP questionnaire method) selecting 7 Key Informants per village/community

b) Based on the filarial disease rate obtained through RAP, stratify the communities into 3 strata, low (having disease prevalence as 0), medium and high using cluster analysis.

c) Select villages/communities from each stratum using proportional allocation based on the population in each stratum. In each of these communities, 10% of the population or 100 individuals which ever is higher may be surveyed. In each community systematically select the households and include all the individuals in that household.

d) In areas where the endemicity is low, additional villages/communities in the high endemic strata can also be selected randomly to evaluate the impact of the programme.

As far as urban areas are concerned, all the Municipalities and Town Panchayats should be covered with a minimum target coverage of 5% of the population drawn from each ward randomly (stratified random sampling). Apart from carrying out night blood parasitological survey, the above sampling design can also be used for entomological surveys (if feasible). However due to lack of trained man power, this may not be feasible to carry out in all parts of India.

8. FORMATS OF DATA CAPTURE: (Sub Group Activity)

Planning and implementation of any disease control programme depends on information support. Information is derived from data and hence the quality of information depends on how the data is collected and the nature of the "instrument" employed in the collection procedure. Therefore, it is essential to develop appropriate formats for data capturing. Design of the forms to be used for recording data depends on the research question for which we need answer.

One of the most important expected outcomes of the workshop was to prepare uniform data capture formats for key information for the implementation of MDD at district level. The participants were involved in developing formats for census enumeration, drug distribution record, summary tables on drug receipt, distribution and balance, sample blood survey and physical examination by the health workers. The developed formats were presented and finalized after a detailed discussion (Annexure VIII).

9. DATA ANALYSES:

Raw data or Primary data collected in the field, by itself does not provide any information and requires to be organized, analyzed and presented. In the programme this process starts from the preparation of summary tables which are simple analyses giving meaningful information. For process evaluation, simple but well designed summery tables can provide adequate and crucial information. Detailed analysis of the data is required particularly for impact assessment in terms of intervention effectiveness and cost-effectiveness. But it is extremely important to understand that most of these analyses in order to be meaningful, require the details about the individual i.e. raw data. In other words, summary tables by themselves will not be useful in carrying out further analyses (since the degree of the variability between individuals crucially decide the significance of the findings).

The analysis pertaining to coverage in terms of distribution and consumption of the drug is critical from both process and impact evaluation (since impact / efficacy is expected to be influenced by programme coverage). Other analyses pertaining to the process evaluation (such as drug requirements and supply, adverse reactions, IEC impact etc.) are primarily useful for formative evaluation, and therefore, the implementing authorities both at State and district level should carry out this exercise themselves, so that they could use the information for programme improvement / evolution. Ideally, impact assessment (summative evaluation) should be done by an independent organization.

Initially the raw data formats were presented and the method of preparing summary table was discussed. For detailed analysis the data could be classified into 4 categories: data for planning, process evaluation, data for impact assessment, data for costing and cost effectiveness analysis. For process evaluation, the common formats developed contain all the necessary data components (Annexure IX).

Data analyses should answer specific questions. Therefore, it is critical to define the key questions that need answer for different activities related to process monitoring /evaluation (usually for a formative evaluation) for impact assessment (summative evaluation). These are discussed below.

9.1. INDICES FOR OPERATIONAL EVALUATION:

Process evaluation can be carried out using some indicators and comparisons can be made between PHCs or between urban and rural or between districts. The

following are the indicators that can be used for this purpose:

Coverage of distribution
Consumption
Compliance

Stage I: Analysis of data for planning:

Key question 1: What is the target population and what is its age / gender structure?

Need: To calculate the drug requirement and to obtain the denominator for later use in measuring gender and age specific coverage of distribution / consumption.

Method: Simple summary table from the enumeration data/ if not from available census data.

Level: Smallest unit-village from which PHC / Taluk / District data can be prepared.

(Please see Annexure X: Tables 1 and 2):

Key question 2: What are the resources available (man power and material) ?

To obtain data on availability of man power at different levels so as to allocate areas (villages) for each provider/s.
To assess the requirements for additional manpower / material / resources required for implementation.

The district authorities can prepare the necessary tables.

Stage II: Analysis of data for process evaluation

There are several aspects on process evaluation. Some of the key questions that could be identified are:

1. Whether the enumeration was carried out properly?
2. Whether a time schedule of activities was prepared and whether this was realistic?
3. Whether the drug requirement was calculated properly (Annexure: X Table 1) and whether the supply was done in time?
4. Whether the staff allocation was done properly ?
5. Whether the training of different level staff was planned and executed properly?
6. Whether the community IEC was proper in its planning development and implementation?
7. Whether the sensitization of community opinion leaders, press and governmental organizations was planned and executed properly.
8. Whether the pre-intervention data were collected properly and whether they were cross-checked properly at different levels (quality, quantity and adequacy)

9. Whether proper data recording and collection forms were used ?
10. What was the coverage of distribution / consumption in relation to area, age and gender; and what are the causes of high / low coverage in certain areas / age or gender class? (Annexure X: Tables 2 & 5).
11. Whether the flow of information was appropriate or not?
12. What are the problem areas in the implementation process that require consideration during re-planning of future drug distribution activity; and what are the reasons for success or failure and how to improve the process?

Again, the district and state level officials should develop their own mechanisms of data collection and analysis for the process evaluation.

9.2. INDICES FOR IMPACT EVALUATION:

Impact assessment is most critical. The current understanding and knowledge of filariasis suggest that overall impact of filariasis control by single annual dosage of DEC cannot be observed in a short period of time. The planning of impact assessment therefore requires understanding of possible impacts in short and long terms. The expected outcomes of the programme are:

1. Reduction in microfilaria density in treated population, and
2. Consequent reduction in transmission
3. Reduction in infection prevalence (relatively slower than 1)
4. Reduction in appearance of new cases of infection
5. Reduction in appearance of new cases with filarial disease (slowest)

Initial survey using RAP method on disease prevalence has to be carried out to assess the disease burden in different PHC areas. This data has to be used to stratify the area so as to select villages for impact assessment using the sampling design given under section 7 (Table 3&4 in Annexure X).

Reduction in microfilaria density and prevalence in treated population: To demonstrate this, blood surveys need to be done before and after intervention. In ideal situations, longitudinal survey of a cohort of population (which provides information on proportions of infected persons loosing their infection or the proportion gaining infection) could provide best results. However, this seems difficult and not realistic, therefore a cross-sectional surveys could be carried out before and after. The age and gender, and area specific mean microfilaria density and prevalence have to be plotted and the changes between the two surveys should be studied (kindly see Annexure X Tables 6-9). This should be carried out for all study districts (based on sampling design mentioned above), even If other measurements are not possible.

Reduction in transmission parameters: This involves the collection and dissection of vector mosquitoes from fixed catching stations at fixed intervals and computing the transmission indices. This is the most direct evidence of the effect of the chemotherapy and is relatively simpler, since it does not involve human sampling. However, due to lack of trained manpower, this cannot be undertaken in all Districts. Therefore, this can

be optionally carried out in areas where the manpower and logistics can be met with.

Reduction in appearance of new cases of infection and disease: This analysis can be only if the same people are examined twice (to see if any of those who are negative in the first survey are positive in the second survey). Even if two cross sectional surveys are carried out, one could still look for results of those who have been covered in both the surveys. In districts (or States such as Tamil nadu), where the entire target population is being enumerated, it is possible to record the obvious filarial disease status for each individual. In this case, a repeat enumeration could provide important information on the new cases appearing. Since this change is expected to be relatively slow, a repeat survey could be done only after a period, not less than 5 years (Tables10 and in Annexure X).

9.3 COST ANALYSIS:

Costing is important at three levels of planning programmes. They include option appraisal, budgeting and evaluation. In the present context costing is considered important for evaluation and budgeting in particular. Costing is defined as the process by which estimates of costs of an action are made. This may be retrospective or prospective, but uniform methodology should be followed. All the steps in costing which include preparation of itemized cost menu, cost profile, identification of financial and opportunity costs and sensitivity analysis for cost minimization were discussed. Formats to record all the resources utilized for this programme have been prepared (Annexure XI). District is identified as the level of costing. However, the information required at PHC level has been identified and accordingly the formats have been prepared. Records have to be maintained at village, PHC and district levels for which the methods of entering the resource inputs were discussed and all the participants were oriented towards this.

9.4.1. SIMPLE STATISTICAL ANALYSIS:

Statistical support is necessary for correct interpretation of data after analysis. In view of this the participants were trained in simple statistical tests required in analyzing data on MDD.

Application of chi-square tests:

To compare coverage, consumption and compliance between gender, age class, areas

To compare change in mf prevalence and disease prevalence

Application of student t-test:

To compare mF intensity in relation to age, gender, area, time (pre/post)

Statistical applications such as Odds ratio require the assistance of statisticians.

10. WORKSHOP REVIEW:

Perception of the participants on the problem, cause and control of filariasis was assessed using objective type of questions. The individual participants score average ranged from 49 to 92%. Post workshop evaluation showed an overall improvement of 38%. The evaluation showed that objectives of the workshop in imparting training and designing necessary methodology and tools are met.

11. RECOMMENDATIONS:

(i) Participation of other district officials from different states is required.
(ii) To provide guidelines for concurrent monitoring to state and district level officials.
(iii) Uniform formats of data collection and minimum analyses should be used in all the 13 districts, so as to make the necessary comparisons possible.
(iv) Training Modules should be prepared for grass root level workers so that there is uniformity in primary data collection.
(v) Community perception and providers perception should be studied for sustainability of the programme.
(vi) To obtain higher acceptance of the community, morbidity management of the existing clinical cases should also be undertaken and the principles of this need to be developed.
(vii) A core group should be formed at national level to monitor the progress of the mass drug delivery programme, to facilitate exchange of information and experience between the different sites.
(viii) The national programme authorities with the help of research organization, should publish "FACT SHEETS" giving details of progress of work in different states/and provide general guidelines.

ANNEXURE - I

List of Participants, Observers and Faculty

LIST OF PARTICIPANTS:

SL NO	NAME & DESIGNATION	INSTITUTE AND ADDRESS
1	Dr.R.Prince Prabhakar Deputy Director	Public Health and preventive Medicine Cuddalore District 3 Beach Road ,Cuddalore, Tamil Nadu-607 001
2	Mr.R.Sankar Rao Senior Entomologist	-do-
3	Mrs..K.Senthamil Selvi District Malaria Officer	-do-
4	Mr.R.Gajapathy Entomological Assistant	-do-
5	Dr.Kamal Kannan * Deputy Director	Public Health and Preventive Medicine Villupuram District 9 & 9A, Armugam Lay out. Kaniakulam Road,Villupuram, Tamil Nadu
6	Ms. Kalai Selvi Junior Entomologist	-do-
7	Dr.Alphonse Selvaraj * Deputy Director	Public Health and Preventive Medicine Thiruvannamalai Health Unit Division Plot NO:9, 10th cross street 5A, Gandhi Nagar, Thiruvannamalai Dist.
8	Dr.A.Elango Deputy Director	Cheyyur Health Division 4 E, New Kanchipuram Road Cheyyur, Thiruvannamalai Dist.
9	Dr.R.Meera Filaria Officer	National Filaria Control Unit Chidambaram,Tamil Nadu
10	Dr.J.Prabhakaran Filaria Officer	23, Veppamara St. Vellapaddi, Vellore ,Tamil Nadu
11	Mr.A.Rajagopal Senior Entomologist	-do-
12	Dr.Keerthiseelan * Assistant Director	National Filaria Control Unit Pondicherry
13	Mr. Narayanappa Senior Health Assistant	District Malaria Office, Kolar, Karnataka, Tel:22037.
14	Dr.S.K.Suresh kumar Research Officer	Institute of Research in Medical Statistics (ICMR), Camp Office. E.Shanmugapuram Colony,Villupuram. Tamil Nadu-605 602.
15	Mr.T.Daniel Rajsekar Statistical Assistant	-do-
16	Mr.C.Govin*Dasamy* Statistical Assistant	-do-
18	Dr.S.Rama Devi* Deputy Director	Allappuzha, Kerala
19	Dr.K.T.Nair* District Medical Officer	Civil Station Kozhikode, Kerala
20		Directorate of Health Services

LIST OF OBSERVERS:

1	Dr.N.C.Appavoo Director	Directorate of Public Health & Preventive Medicines (Malaria & Filaria) Govt. Of Tamil Nadu Annasalai, Chennai - 600 006.
2	Dr.Paul Kan*Das*amy Joint Director, Public Health	-do-
3	Dr.M.V.Murugendrappa Joint Director (Malaria & Filaria)	Directorate of Health & Family Welfare Ananda Rao Circle Bangalore- 9 Karnataka St.
4	Dr.D.Bora Chief Medical Officer	Helmithology Division NICD, 22 Shamnath Marg. New Delhi - 54.
5	Dr.K.Regu Deputy Assistant Director	Regional Filaria Training & Research Centre (NICD), Karaparamba.P.O. Calicut - 673 0101, Kerala.
6	Dr.V.Kumarasamy * Deputy Director	Tuberculosis Research Centre Mayor V.R.Ramanathan Road. Old Spurtank Road Chetput Chennai - 600 031 Tamil Nadu
7	Dr.K.N.*Pani*cker Deputy Director (SG)	Vector Control Research Centre,(ICMR) Medical Complex, Indira Nagar Pondicherry-605 006.
8	Dr.L.K.*Das* Senior Research Officer	-do-
9.	Dr.J.Yuvaraj, Research Officer	-do-

* Could not attend.

FACULTY

1	Dr.P.K.Das Director	Vector Control Research Centre, Medical Complex, Indira Nagar, Pondicherry 605 006.
2	Dr.N.B.L.Saxena Deputy Director	National Malaria Eradication Programme 22, Shamnath Marg, New Delhi- 110 0 54
3	Dr.M.D.Gupte Director	Institute for Research in Medical Statistics (ICMR),Mayor Ramanathan Road Old Spurtank Road, Chetput, Chennai 31
4	Dr.S.P.Pani Deputy Director	Vector Control Research Centre, Medical Complex, Indira Nagar, Pondicherry - 605 006.
5	Dr.K.Krishnamoorthy Assistant Director	-do-
6	Mrs.A.Srividhya Statistical Assistant	-do-

ANNEXURE - II
Schedule of work

Day	Morning	Afternoon
20.4.98	➢ **Perceptions of Participants** ➢ **Introduction to Workshop (Plenary, *Das*)** ➢ **Goal, aims, objectives and expected outcomes of the workshop (*Das*)** ➢ **Filariasis Problem and its control in India (*Saxena*; Chairperson: *Appavoo*)**	➢ **Presentation of District Reports** **Cuddalore - Senthamil Selvi** **Thiruvannamalai - Rajagopalan** ➢ **Discussion on other Districts - open (Chairperson : Murugendrappa)** ➢ **Need for data collection (Plenary, *Das*; Chairperson: *Appavoo*)** **Data Requirement with respect to phases of Programme Planning, implementation, evaluation and monitoring: (Interactive: *Pani*; Chairperson: *Saxena*)** ➢ **Activities Versus phases of programme, (sub group activity) followed by Plenary (*Pani*)**
21.4.98	➢ **Presentation of Subgroup reports of (Chairperson: *Saxena*)** ➢ **Planning –Rajagopal** ➢ **Implementation, Evaluation and monitoring - Meera** ➢ **Methods of data collection (Plenary: *Pani*; Chair person: *Saxena*)** ➢ **Sampling designs (Plenary: Srividya; Chairperson: *Saxena*)** **Principles of sampling, Sampling unit/intervention units, sample size, simple random, systematic random, stratified random, cluster sampling** ➢ **<u>Exercise:</u> Subgroup formation: Sampling design for a district for selection of villages/households/individuals on Health worker physical examination night blood survey, Compliance survey, Entomological survey, Evaluation of IEC** ➢ **Presentation by lead participant of subgroup**	➢ **Formats of data collection (Interactive: *Krishnamoorthy*; Chairperson: *Saxena*)** ➢ **Preparation of data capture formats for (Subgroups)** ▪ **Census, drug distribution & Compliance survey** ▪ **Night blood survey, health worker physical examination** ▪ **Entomological survey, Evaluation of IEC, Supply and stock of drugs**

22.4.98	➢ **Presentation of Sampling design by participants (Plenary: Srividya; Chairperson: Dr.M.D.*Gupte*)** ➢ **Finalization on formats for data collection (Plenary: *Krishnamoorthy* & Dr.S.P.*Pani*; Chairperson: *Saxena*)**	➢ **Data formats – presentation and discussion (Interactive: *Krishnamoorthy* & Dr.S.P.*Pani*; Chairperson: *Saxena*)** ▪ **Data formats for primary data capture on summary table** ▪ **Data verification** ▪ **Cross checking, quality and cleaning**
23.4.98	➢ **Introduction to Epidemiological terminology, parameters and indices for process\ impact assessment (Plenary: *Pani*; Chairperson: *Das*)** - **Principles of data analysis** - **deciding appropriate indicators for key questions that need answer** - **concepts and definitions of indicators and preparing primary tables** - **data distribution** - **analyses for monitoring process** - **process evaluation** - **Impact assessment**	➢ **Simple Statistical Analysis (Plenary: Srividya; Chairperson: *Saxena*)** - **concepts of mean, variance, standard deviation,** - **basis for statistical comparisons** ➢ **Cost analysis, cost effectiveness analysis (planery, Krishnamoorhty; Chariperson: *Das*)**
24.4.98	➢ **Post Workshop perceptions of participants (*Saxena* & *Das*)** ➢ **Evaluation of the workshop by the participants (Plenary, *Krishnamoorthy* & *Srividhya*)**	➢ **Open discussions and Recommendations (Chariperson: *Saxena*)** ➢ **Closure of the workshop (Chariperson: *Das*)** ➢

Annexure III

Questionnaire for workshop evaluation[1]

(Question Nos. 1-45 were used for pre-workshop assessment and 1-70 for post workshop assessment)

(Kindly choose the correct answer without consulting other participants)

1. Estimated number of diseased individuals due to lymphatic filariasis in India (as per the estimate of 1994)
   a) 21 million
   b) 19 million
   c) 45 million

2. The population at the risk of filarial infection live in urban area
   a) 100 million
   b) 90 million
   c) 109 million

3. Population living in the endemic areas of *Brugia malayi* in India
   a) 1 million
   b) 2 million
   c) 2.5 million

4. Prevalence of diurnal sub-periodic form of *Wuchereria bancrofti* in India is reported from
   a) Orissa
   b) Tamil Nadu
   c) Nicobar Group of Islands

5. Peak prevalence of infection occurs among
   a) children
   b) men
   c) age class between 15 and 25 years

6. Filariasis is not a killer disease, yet it deserves control because of
   a) economic implications due to morbidity among the diseased
   b) Social stigma attached to this disease
   c) both

7. Control strategies under NFCP include
   a) Anti-parasitic measure
   b) Anti-vector measures
   c) Both vector control and selective chemotherapy

8. Filariasis is recognized as one of the "potentially eradicable" diseases
   a) not sure
   b) true
   c) false

9. Planning of the control programme require
   a) situation analysis
   b) selection of appropriate control options
   c) resources available
   d) all the above

10. Data is collected for
    a) Programme development
    b) Programme evaluation
    c) both

11. Evaluation is necessary to
    a) review the situation before the programme is launched
    b) make appraisal when the programme is in operation
    c) suggest ways and means to improve its operation and solve the short comings
    d) to assess the impact
    e) all the above

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[1] Correct answers are highlighted in bold only for the reader of this report

12. Mass drug administration is primarily
a) to cure disease
b) to reduce transmission
c) to protect individual

13. Mass drug administration benefits
a) individual
b) community
c) both

14. Single dose DEC administration is chemoprophylactic
a) true
b) false
c) not known

15. The indicator of operational efficacy of distribution of drug in MDA programme is
a) coverage
b) compliance
c) occurrence of side reaction

16. Factor(s) influencing coverage and compliance under MDA
a) Health awareness programme
b) perceived benefits
c) time of visit
d) all the above

17. Sensitization is required for
a) the community
b) the providers
c) for both

18. Why to sensitize the community
a) to create awareness on the programme for better utilization of health care
b) to motivate the individuals to participate
c) both

19. Information is an outcome of
a) data analysis
b) data organization
c) knowledge

20. Minimum data set should contain details of
a) individual - age/gender
b) place and time
c) all the above

21. Primary data is
a) raw data generated for the purpose of the study
b) data generated for some other study
c) data from published reports

22. One of the following is a quantitative data
a) infection status (positive/negative)
b) parasite count
c) degree of side reaction

23. Data analysis is to
a) derive information
b) organize data base
c) manage data base

24. For a meaningful inference on mean, which of the following is appropriate
a) mean with variance
b) mean with variance and sample size
c) mean with range

25. Statistical tests can not be applied for
a) indices
b) mean
c) proportion

26. Prevalence is
a) **Number positive for infection/ Number surveyed*100**
b) Number positive for infection/

Total population*100

c) Number surveyed/Total population*100

27 Incidence is

a) Number positive for infection/ Number surveyed*100

b) Number of new cases/Number surveyed*100

c) Number of new cases/Total population*100

28. Mean microfilaria count is

a) Total number of microfilaria in positive individuals/total number of positives

b) Total number of microfilaria in positive individuals/ total population

c) Total number of microfilaria in positive individuals/total number of individuals surveyed

29. What is the indicator to assess the effectiveness of larviciding

a) Reduction in vector density

b) Reduction in parasite density in mosquitoes

c) Reduction in vector survival

30. What is the indicator to assess the effectiveness of residual insecticides

a) Survival of vector population

b) reduction in parasite load in mosquitoes

c) both

31 Impact of IEC can be assessed by

a) refusals

b) compliance

c) both

32 Census data is required

a) to determine drug requirement

b) as base line data to develop sampling design

c) for both a & b

33. Easiest way to determine dosage for community treatment is

a) age

b) weight

c) height

34. Knowledge on seasonality of transmission is important for deciding

a) timing of monitoring of control programme

b) timing of drug distribution

c) timing of programme evaluation

d) all of them

35. What statistical method can be used to compare the mean density of microfilaria between pre and post control

a) t test

b) chi-square test

c) ANOVA test

36. Mass Drug Administration means

a) handing over the drug to the individual

b) supervised consumption

c) handing over the drug to any one of the family inmate

37 Record keeping on drug distribution is important for

a) to check the drug distributed and balance

b) to update the eligible population

c) to check whether correct dosage is given

d) all the above

38. Recording the time of blood collection is

a) required and not important
b) not required
c) required and important

39. Sample blood survey means
a) select all the individuals for screening
b) select only a proportion of individuals
c) screen all the adults individuals from selected households

40. Hydrocele is due to
a) only filariasis
b) filariasis and other causes
c) non-filarial

41. Bancroftian filarial disease affects
a) equally males and females
b) more males than females
c) more females than males

42. Of the two filarial parasites in India, one is *Wuchereria bancrofti* and the other is
a) *Brugia timori*
b) *Brugia malayi*
c) *Brugia pahangi*

43. Cost of the programme is required to be recorded for
a) better utilization of resources
b) relating with the outcome
c) all the above

44. MDA will be
a) Prophylactic
b) Therapeutic
c) Preventive
d) none of the above

45. Change in infection prevalence is
a) short term indicator of programme effectiveness
b) long term indicator of programme effectiveness
c) not an indicator of programme effectiveness

46. Mf negatives
a) indicate the person is not infected
b) the person is infected but mf is not available
c) both a/b are possible

47. DEC is prophylactic
a) True
b) False
c) Not known

48. Data verification is to
a) Check the entire record of a few subjects randomly
b) check every data that is collected
c) check the method of entry

49. Ambiguity in data collection is
a) validity of the data
b) reliability of the data
c) both a & b

50. Lymphatic filariasis in India is
a) a rural
b) an urban disease
c) both

51. Filariasis clinic established under NFCP is to cover
a) rural endemic population
b) urban endemic population
c) both

52. For delimination survey of filariasis the ideal method of sampling is
a) simple random sampling
b) cluster sampling
c) systematic sampling

53. The right method to see changes in

infection due to intervention is
a) by longtitudinal study
b) cross sectional study
c) random survey

54. Format is
a) data recording tool
b) an application
c) a qualitative research control

55. The objective of task force formation at district level is
a) to gain co-ordination and support from other departments
b) to plan programme
c) to execute programme

56. Sensitization at all level is required to achieve
a) community co-operation
b) effective implementation of the programme
c) intersectoral collaboration
d) all the above

57. Sampling design of a community study should consider
a) population size
b) sex ratio
c) birth rate

58. Data relating to control programme is required for
a) planning
b) evaluation
c) implementation
d) all the above

59. Intervention measures against infectious diseases influence
a) gain rate
b) loss rate
c) both

60. The difference between prevalence and incidence lies with the concept of
a) population
b) time
c) method of diagnosis

61. Monitoring is
a) concurrent assessment of plan implementation
b) concurrent implementation of programme
c) both

62. Evaluation can be
a) formative
b) summative
c) both

63. Elimination means
a) local transmission ceases
b) local transmission continues but ceases to be a public health problem
c) all the above

64. To determine gain rate of disease, one of the following is appropriate
a) cross sectional study
b) retrospective study
c) longitudinal (cohort) study

65. Interobserver error will affect
a) reliability of the data
b) validity of the data
c) none of the above

66. Proportion is
a) out of one
b) out of 100
c) out of 1000

67. Coverage is in respect of
a) total population
b) eligible population
c) diseased individual

68. An area can be classified as endemic when
    a) only imported cases are reported
    b) indigenous transmission is reported
    c) cases occur in large numbers at a particular season only.
69. One of the following transmission parameters can be used to assess the MDD programme
    a) the man biting rate
    b) man hour resting density
    c) infection intensity in vector mosquitoes
70. Mean intensity of microfilaria in human is
    a) specific indicator of vector control programme
    b) the only indicator of success or failure of the MDD programme
    c) none of the above.

ANNEXURE IV

DATA REQUIREMENTS:

(with respect to phases of programme)

What is data ?
What is information ?
Decide to collect data if you need certain information
Be clear what information you need.

Phases of programme:

Planning
Implementation
Evaluation
Monitoring

PLANNING:

Distribution of problem:

Where is the problem ?
Who is suffering ?
When does the problem occurs ?

Intersection definition:

What is the goal of intersection ?
What is the best and feasible intersection ?

Drug requirement:

What is the target population ?
What is their age structure ?
What is the drug requirement of different levels of intersection ?

IEC requirements:

What is the motivation of the consumers to accept the programme?
What is the information to be given ?
what is the best method of doing so ?

Distribution:

Who will distribute ?
How many can be distributed in unit time ?
What are the logistics required ?

Monitoring and evaluation plan:

What to monitor and what to evaluate ?
How to monitor and evaluate ?

Training requirements:

What is training ?
Whom to train ?
How to train ?
When to train ?

Resourse requirements:

What are the materials required ?
What are the logistics required ?
What is the financial requirements ?

ACTIVITY SCHEDULE (ACTION PLAN)
JOB DEFINITION AND AUTHORITY

Data to be collected for:

Planning
Implementation
Monitoring and Evaluation

ANNEXURE V

DEFINITION OF TERMS (GENERAL)

Rate
Prevalence
Incidence
Coverage
Endemicity
Control
Elimination
Eradication
Cross section study
Longitudial (Cohost) study - Gain Rate and Loss Rate

DEFINATION OF TERMS (FILARIASIS)

(A) EPIDEMIOLOGICAL

Prevalence infection : $\frac{\text{Number infected}}{\text{Number surveyed}} \times 100$

Prevalencey disease : $\frac{\text{Number diseased}}{\text{Number surveyed}} \times 100$

Mean intensity of infection: $\frac{\text{Total No. Of mf}}{\text{Number surveyed}}$

Incidency infection : $\frac{\text{No. Of new cases of infection}}{\text{No. Examined twice.}} \times 1000$

Incidence of disease : $\frac{\text{No. Of new case of disease}}{\text{No examined twice}} \times 1000$

(B) ENTOMOLOGICAL

Mean hour density : $\frac{\text{Total mosquitoes collecIted}}{\text{No. Of man hour spent}}$

Parous rate: $\frac{\text{Total parous}}{\text{No. Dissected}} \times 100$

Man biting Rate: $\frac{\text{Total biting mosquitoes collection}}{\text{No. Of man hour spent}}$

Infection Rate: $\frac{\text{No. Infected (any stage)}}{\text{No dissected}} \times 100$

Infecticity Rate: $\frac{\text{No of infective}}{\text{No dissected.}} \times 100$

Mean intensity of mf : $\frac{\text{Total No. Of mf}}{\text{No. Dissected.}}$

Risk of infection Index: R II = A x B x C

A: Biting density
B: Proportion parous (biting)
C: Proportion infective (Parous)

(C) OPERATIONAL:

Coverage of MDA = $\frac{\text{No. Distributed}}{\text{Target population}} \times 100$

ANNEXURE - VI

List of important activities in different stages of Planning, Implementation and Evaluation of the pilot large scale control programme in Cuddalore district of Tamil Nadu, India.

Main Activity	Sub Activities	Objectives
1.Planning	1. Meeting of DPH, district authorities, VCRC, NICD Scientists	Approval of strategy and presentation of macro plan.
	2. Sensitization of district level officials and others.	Appraisal and solicit involvement of other govt. Organizations /Press / NGO / Public.
	3. Preparation of micro level action plan.	To make decisions on Time frame, Budget proposal, Resource monitoring and Man Power assessment
	4. Development of reporting system.	To devise Methods of primary data capture / survey and tables.
	5. Development of IEC material.	For public motivation to make the programme a success.
	6. Assessment requirement for manpower and material availability.	To achieve good coverage under the programme and further planning
	7. Devise mechanisms for - Drug requirement assessment. - Drug procurement and supply to providers. - Drug distribution. - Adverse reaction management. - Information flow.	To prevent non-availability of drugs, to get good community participation.
	8. Planning for training	For successful implementation
	9. Devise mechanism of monitoring and evaluation for implementation, operation and impact assessment.	- Process evaluation - Impact assessment
	10 Review of planning	

Main Activity	Sub Activities	Objectives
2.Implementation	1. Enumeration	Assessment of Drug requirement and motivating the community
	2. Procurement and supply of drug to providers	For successful implementation
	3. IEC campaign	Community mobilization
	4. Training	On Drug distribution, Proper recording of drug distribution details and adverse reaction management
	5. Drug distribution and Adverse reaction management	To obtain good coverage and community participation
	6. Report preparation	Reporting on summary details
3.Evaluation	1. Identification of endemic villages by RAP - Design of evaluation - Parasitological - IEC evaluation	To identify endemic pockets Proper sample selection To assess the impact on mF To assess the coverage & compliance
	2 Formats of data capture	To do meaningful analyses of the data. To collect data without bias
	3 Training	
	4 Surveys	
	5 Data organization	
	6 Analysis & report writing	

ANNEXURE VII

METHODS OF DATA COLLECTION:

CONCEPTS OF

 # Primary Data

 # Secondary Data

1. AVAILABLE DATA:

Records:
(PHC/Hospital/others)
Reports:
Publication:

2. DIRECT MEASUREMENTS:

Epidemiological
Census
Physical examination of Health Worker
Parasite survey
Antigen survey
Clinical survey

Entomological
Adult
Immature

3. ETHNOGRAPHIC DATA:

Qualitataive
Focus group discussion
Key informant interview
Indepth interview
Observation

Quantitative
Structured questionnaire

CHOICE OF DATA COLLECTION METHOD

Factors to be considered
Objectives of collection
Appropriateness
Sensitiveness
Influence of data on decision
Cost
Logistics
Feasibility

ANNEXURE VIII

Sampling design: steps to be followed for efficacy evaluation

1. Objective:

   To evaluate the efficacy of the Mass Drug Delivery programme for filariasis control in a district.

Information required: Microfilaria prevalence and intensity

Population under study: Individuals in rural and urban areas.

Stage I: Collection of baseline data on disease prevalence using Rapid Assessment procedure using questionnaire method (Key Informant Technique) covering the entire district including urban and rural areas

Sampling Frame: Maps, Demographic details, Details on Human settlements etc.,

Stratification of areas: Based on disease prevalence the area can be stratified into low, medium and high

Stage II: Sampling design for mF surveys

Step	Urban	Rural
I	All towns should be sampled	Stratified Random sampling by grouping the villages into low, medium and high strata
II	All wards in each town should be selected	Proportional (to population) Random selection of villages in each strata
III	Systematic sampling of Households each ward & all individuals in those households	Systematic sampling of Households in selected villages & all individuals in those households

ANNEXURE IX
DATA CAPTURE FORMATS

FAMILY REGISTER CUM DRUG DISTRIBUTION RECORD

1. Name of Village _____ 2. Name of HSC _____ 3. Name of PHC _____

4. Name of Taluk/Block _____ 5. Dates of Enumeration: from-_____ to _____ 6. Collected by _____

7. Ward _____ 8. Street_____

Id No	Door No.	Name	Head of the family	Age	Sex (F/M)	Limb swelling (Y/N)	I round date		
							Present (Y/N/D)	No. of tablets given	Consumed (Y/N)

- For each street start at a new page
- Yes='Y' No='N' Dead='D'

DRUG DISTRIBUTION FOR THE VISITING INDIVIDUALS

Round: Date:

Sl. No.	Name	Age	Sex	No. tablets given	From where visited	
					Village	District

ADDITIONAL SHEETS IN THE FAMILY REGISTER

MASS DRUG DELIVERY PROGRAMME

District level Summary table 1 - population data (benefciiaries)

District: _____ Round : _____

Date of reporting: _____

Sl. No.	Name of the PHC	Age														
		1+ to 2		2+ to 4		4+ to 8		8+ to 11		11+ to 14		>14		Total		
		F	M	F	M	F	M	F	M	F	M	F	M	F	M	Total
Total																

C:\QPW\NFDCOST FOR EVALUA Source: Family registers

MASS DRUG DELIVERY PROGRAMME

District level Summary table 2 - population covered

District: _____ Round : _____

Date of reporting: _____

Sl.N	Name of the PHC	Age														
		1+ to 2		2+ to 4		4+ to 8		8+ to 11		11+ to 14		>14		Total		
		F	M	F	M	F	M	F	M	F	M	F	M	F	M	Total
Total																

C:\QPW\NFDCOST FOR EVALUA Source: Family registers following each round of MDA

District level Summary table 3 - Drug supply and balance

District: _____

Date of reporting: _____

Sl.No.	Name of the PHC	No. teams involved	No. persons						Population covered on day					
			Health	Teachers	ICDS	Nutrition	NGOs	Others	1	2	3	4	5	Total

District level Summary table 4 - Drug supply and balance

District: _____ Round : _____

Date of reporting: _____ _____

Sl.No.	Name of the PHC	No. tablets supplied	No. tablets distributed	Balance	Population

SAMPLE BLOOD SURVEY

1. Village _____ 2. PHC _____ 3. Taluk _____

4. Date _____ 5. Collected by _____ 6. Examined by _____

7. Street/ward _____

Id No	Door No.	Name	Relationship	Age	Sex M/F	Slide No.	Mfc*

KEY INFORMANT INTERVIEW

Village _____ PHC _____ HSC _____

Taluk _____ District _____ Collected by _____

---

1. Key informant's detail:

   Name: Age: Gender:

   Educational status Occupation:

   Address:

2. What is the population in your village?

3a. Order six diseases that affects adults in your village

   a. b. c.

   d. e. f.

3b. Order three diseases that occur among adults you feel to be controlled

   a. b. c.

4. During this year any one in your village was affected by brain fever? Y/N

   If yes how many?

5. Any one in this village is affected by filariasis? Y/N

   If yes how many?

6. Any one in your village is affected by hydrocele? Y/N

   If yes how many?

7. Any one in your village is affected by intestinal worms? Y/N

   If yes how many?

8. During this year any one in your village was affected by jaundice? Y/N

   If yes how many?

9. Any one in your village is affected by leprosy? Y/N

   If yes how many?

10. In your village any one is affected by tuberculosis? Y/N

    If yes how many?

11. During this year any one in your village was affected by malaria? Y/N

    If yes how many?

12. During this year any one was suffering from dengue fever? Y/N

    If yes how many?

13. Please mention any other public health problem you feel to be important

COMPLIANCE SURVEY

1. Name of the respondent: _____ 2. Age _____ 3. Sex : M / F

4. Village _____ 5. PHC _____ 6. HSC _____

7. Taluk _____ 8. Date _____ 9. Collected by _____

I. Did you receive the drug: Y/N

1. If yes how many tablets?

2. If yes from whom? Distributor/other household/others (mention)

3. Did you consume the drug Y/N

3a. If yes when? At the time of distribution /later

3b. Did you consume in empty stomach Y/N

II. Did you perceive any benefit after consuming the drug? Y/N

1. If yes what?

III. Did you feel any discomfort after consuming the drug? Y/N

1. If yes what?

2. How many days it persisted?

3. Did it affect your day to day activities? Y/N

3a. If yes how many days?

ANNEXURE X

Table 1

Population distribution in relation to age for calculating drug requirement

Age	Popul	Number of tablets(50 mg) required per person	Total number of tablets(50 mg) required
1 - 2	127	1	127
+2 - 4	224	2	448
+4 - 8	492	3	1476
+8 - 11	314	4	1256
+11 - 14	259	5	1295
+14	2898	6	17388
Total	4314		21990

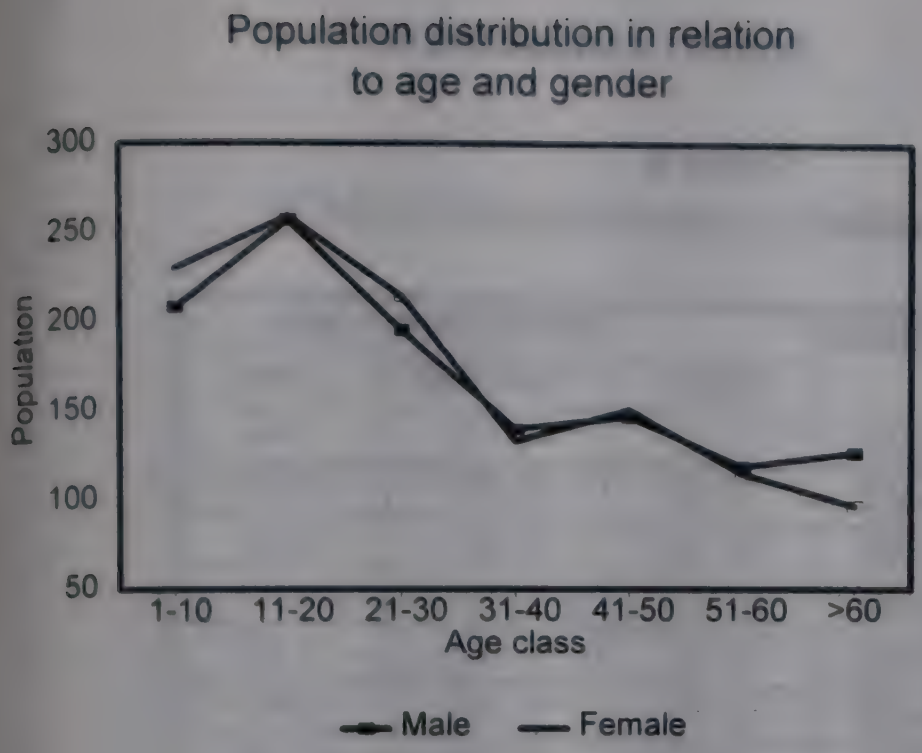
Please note that the age classes in above table have been arranged as per the number of tablets required

Table 2

Population structure and coverage

Age class	Population			Coverage					
	Male	Female	Total	Male		Female		Total	
				No.	%	No.	%	No.	%
1-10	208	230	438	193	92.79	220	95.65	413	94.2
11-20	257	259	516	214	83.27	220	84.94	434	84.1
21-30	195	214	409	146	74.87	173	80.84	319	78.0
31-40	140	133	272	98	70.00	109	81.95	231	84.9
41-50	147	151	268	117	79.59	138	91.39	239	89.1
51-60	119	115	234	109	91.60	95	82.61	204	87.1
>60	127	97	224	102	80.31	74	76.29	176	78.5
Total	1162	1199	2361	987	84.94	1029	85.82	2016	85.3

Please note that the age class in the above table has been arranged in such a way that we can see the coverage for age classes of 10 years



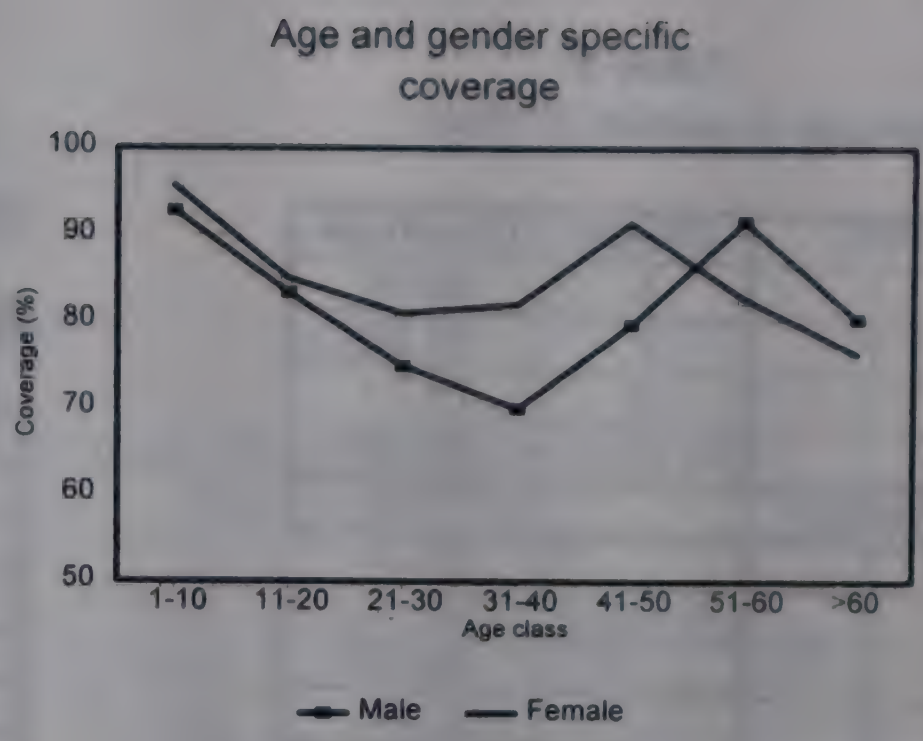


Table 3

Prevalence of filarial disease

PHC	Village	Population			Lymphoedema cases		Hydrocele cases	
		Male	Female	Total	Mean Number+SD	Rate#	Number	Rate*

: Mean number of cases in the village/total population (both sexes inclusive) X 100

* : Mean number of cases in the village/male population in the village X 100

Table 4

Stratification of villages based on disease prevalence

Strata*	No. villages	% of villages out of total
1	25	32.05
2	41	52.56
3	12	15.38

* : 3 Strata can be determined based on cluster sampling technique

NB: 1. For impact assessment, the villages can be selected based on proportional allocation for e.g 10%

2. If the number is too low in a particular stratum biassed sampling can be followed

Table 5

Coverage in relation to area

PHC	Village	Coverage
1	1	85.09
1	2	56.88
1	3	72.21
1	4	85.39
Average		74.89
2		95.25
2		67.06
2		98.16
2		87.85
Average		87.08
3		81.9
3		75.05
3		74.45
Average		77.13

Impact assessment

Table 6

Mircrofilaria prevalence prior to MDA

Age class	Microfilaria rate		
	Male	Female	Total
1-10	1.11	1.72	1.42
11-20	3.32	3.70	3.53
21-30	6.13	2.66	3.96
31-40	6.83	1.53	3.73
41-50	5.47	1.87	3.58
51-60	5.48	1.39	3.49
>60	4.89	3.16	4.18
Total	4.75	2.29	3.41

Table 7

Mircrofilaria prevalence after first round of MDA

Age class	Microfilaria rate		
	Male	Female	Total
1-10			
11-20			
21-30			
31-40			
41-50			
51-60			
>60			
Total			

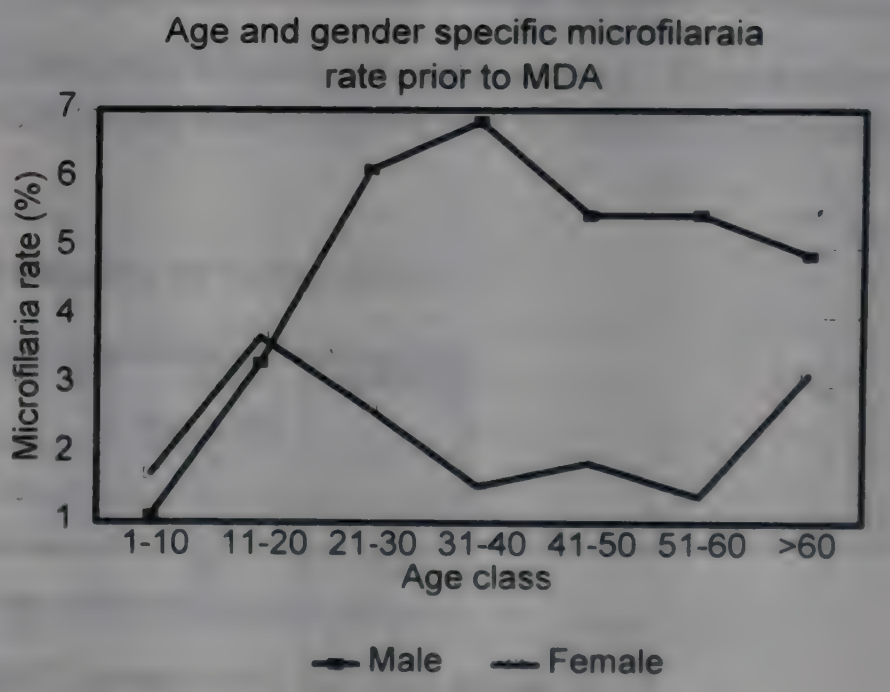


Table 8

Mean Mircrofilaria count (mfc) prior to MDA

Age Class	Microfilaria rate		
	Male	Female	Total
1-10	0.05	0.03	0.18
11-20	0.31	0.08	0.18
21-30	0.23	0.11	0.16
31-40	0.50	0.04	0.23
41-50	0.12	0.16	0.20
51-60	0.05	0.07	0.06
>60	0.11	0.21	0.15
Total	0.20	0.15	0.17

Table 9

Mean Mircrofilaria count (mfc) after first round of MDA

Age Class	Microfilaria rate		
	Male	Female	Total
1-10			
11-20			
21-30			
31-40			
41-50			
51-60			
>60			
Total			

Age and gender specific mean microfilaria count prior to MDA

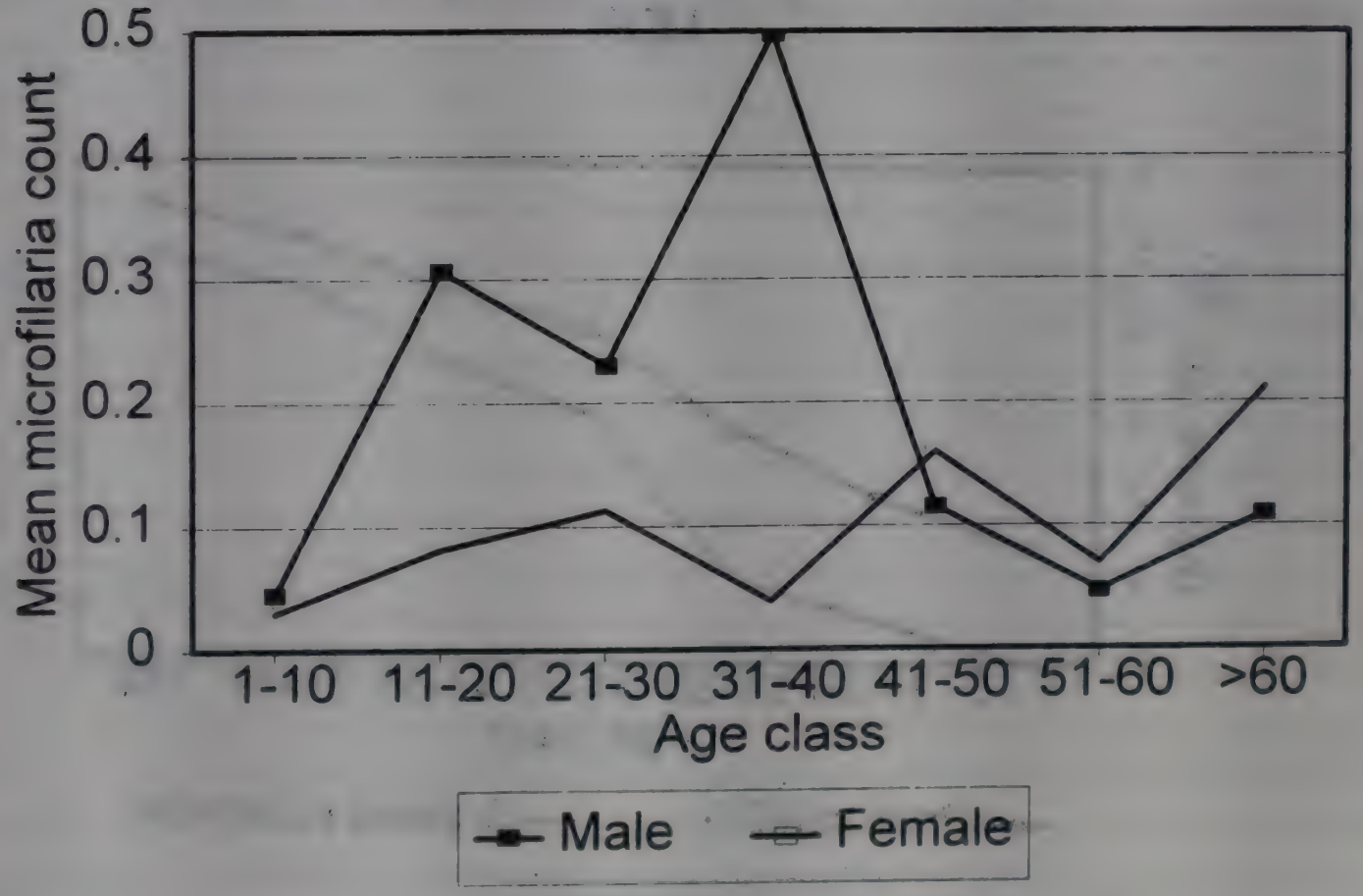
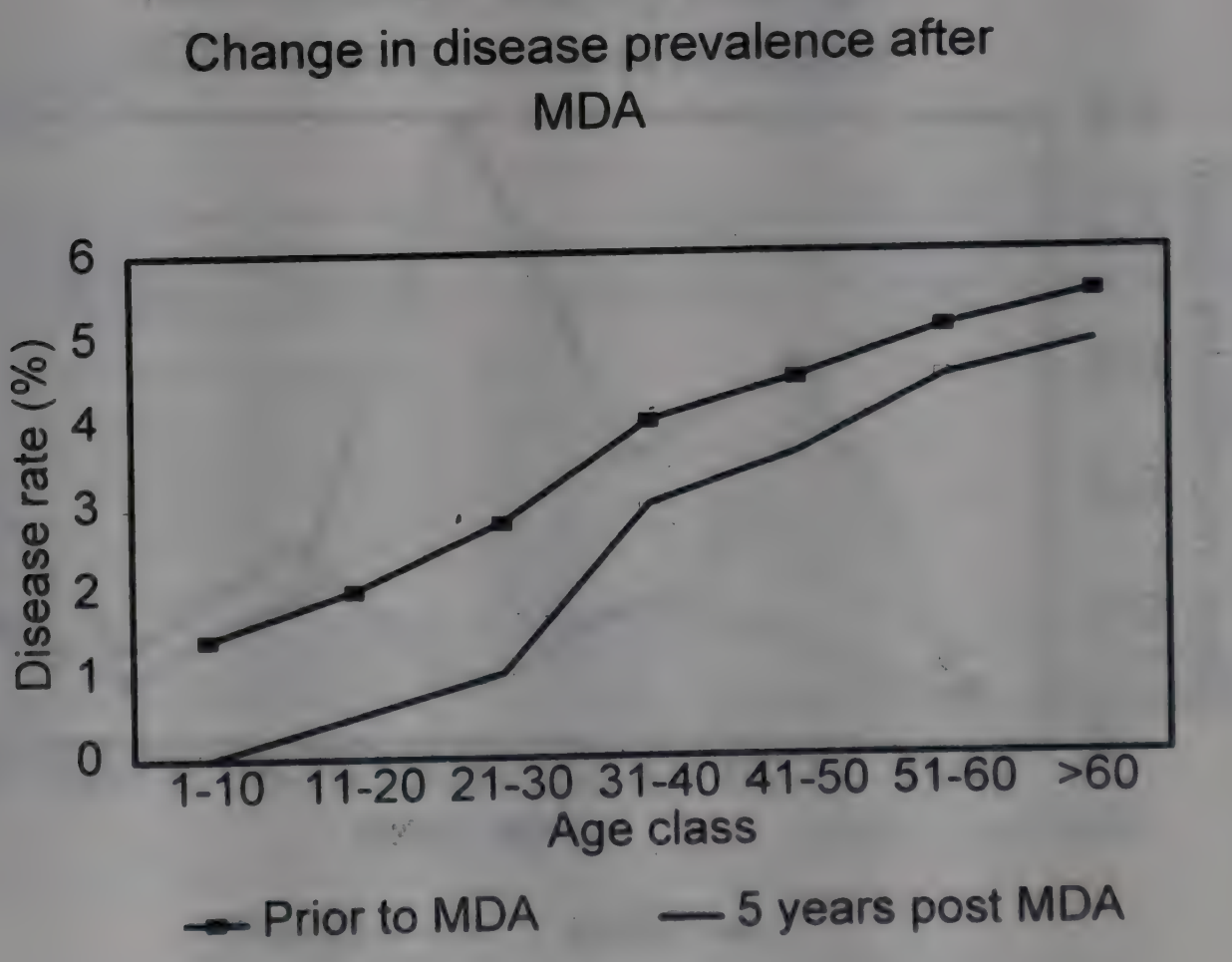


Table 10

Disease rate prior to and after 5yrs of MDA

Age Class	Disease rate - prior			Disease rate - post		
	Male	Female	Total	Male	Female	Total
1-10	1.11	1.72	1.42			0.00
11-20	3.32	3.70	2.00			0.50
21-30	6.13	2.66	2.80			1.00
31-40	6.83	1.53	4.00			3.00
41-50	5.47	1.87	4.50			3.60
51-60	5.48	1.39	5.10			4.50
>60	4.89	3.16	5.50			4.90
Total	4.75	2.29	3.62			2.50



ANNEXURE XI
FORMATS FOR COST DATA

MASS DRUG DELIVERY (NFD) COSTING

PLANNING LEVEL: Directorate/District/PHC

Date:_____ Meeting/workshop

1	PERSONNEL:	Name	Designation	Allowances
	Experts			
	1			
	2			
	3			
	4			
	5			
	Participants			
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	Driver			
	1			
	2			
	3			
	4			
	5			
2	SUPPLIES	Unit cost	No. units	
	1			
	2			
	3			
	4			
	5			
4	MISCELLANEOUS			
	1			
	2			
	3			
	4			
	5			
5	TRANSPORT	Unit cost (per Km)	Km run	
	1			
	2			
	3			
	4			
	5			

Purpose:

MASS DRUG DELIVERY (NFD) COSTING

FAMILY ENUMERATION **LEVEL: PHC/VILLAGE**

Date:_____ Place: _____

1	PERSONNEL:	Name	Designation	Allowances	No. days
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	Driver				
	1				
	2				
2	SUPPLIES	Unit cost	No. units		
	1 Registers				
	2				
	3				
	4				
	5				
3	TRAVEL	Name of the place	Distance (Km)	Fare paid	
	1				
	2				
	3				
4	MISCELLANEOU				
	1				
	2				
5	TRANSPORT	Unit cost (per Km)	Km run		
	1				
	2				

DRUG DELIVERY

A. Personnel

Date:_____

Sl. No.	Name of the village	Persons involved									
		1		2		3		4		5	
		Designation	No. days	Designatio	No. days	Designation	No. days	Designation	No. day	Designation	No. days
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

B. Supplies

Sl. No.	Name of the village	Number of tablets given							
		Date 98	Date 98	Date 98	Date 9	Date 98	Date 9	Date 98	Date 9
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

MASS DRUG DELIVERY (NFD) COSTING

SUPERVISION

Date:_____ Name of the PHC: _____

Sl. No.	Name of the village	Supervised by											
		Supervisor 1				Supervisor 2				Supervisor 3			
		Designation	Date	Vehicle/bus	Km run/fare	Designation	Date	Vehicle/bus	Km run/fare	Designation	Date	Vehicle/bus	Km run/fare
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

BACK COVER:

Workshop in progress

Plate 1: Plenary Session

Plate 2: Group activity

PLATE 1

PLATE 2